CORNELL UNIVERSITY

OFFICIAL PUBLICATION

AUGUST 26, 1950

School of Nutrition

ANNOUNCEMENT FOR

1950-51 SESSIONS

THE UNIVERSITY CALENDAR

1950–51

FALL TERM

Freshman Orientation begins	Sept. 15, *Friday*
Registration	Sept. 18–19, *Monday* and *Tuesday*
Instruction begins	Sept. 20, *Wednesday,* 1 p.m.
Midterm grades due	Nov. 8, *Wednesday*
Thanksgiving recess:	
Instruction suspended	Nov. 22, *Wednesday,* 12:50 p.m.
Instruction resumed	Nov. 27, *Monday,* 8 a.m.
Christmas recess:	
Instruction suspended	Dec. 20, *Wednesday,* 10 p.m.
Instruction resumed	Jan. 4, 1951, *Thursday,* 8 a.m.
Examinations begin	Jan. 22, *Monday*
Examinations end	Jan. 31, *Wednesday*
Midyear holiday	Feb. 1, *Thursday*

SPRING TERM

Registration	Feb. 2–3, *Friday* and *Saturday*
Instruction begins	Feb. 5, *Monday,* 8 a.m.
Midterm grades due	Mar. 24, *Saturday*
Spring recess:	
Instruction suspended	March 24, *Saturday,* 12:50 p.m.
Instruction resumed	April 2, *Monday,* 8 a.m.
Examinations begin	May 28, *Monday*
Examinations end	June 5, *Tuesday*
Commencement Day	June 11, *Monday*

CORNELL UNIVERSITY OFFICIAL PUBLICATION

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Faculty

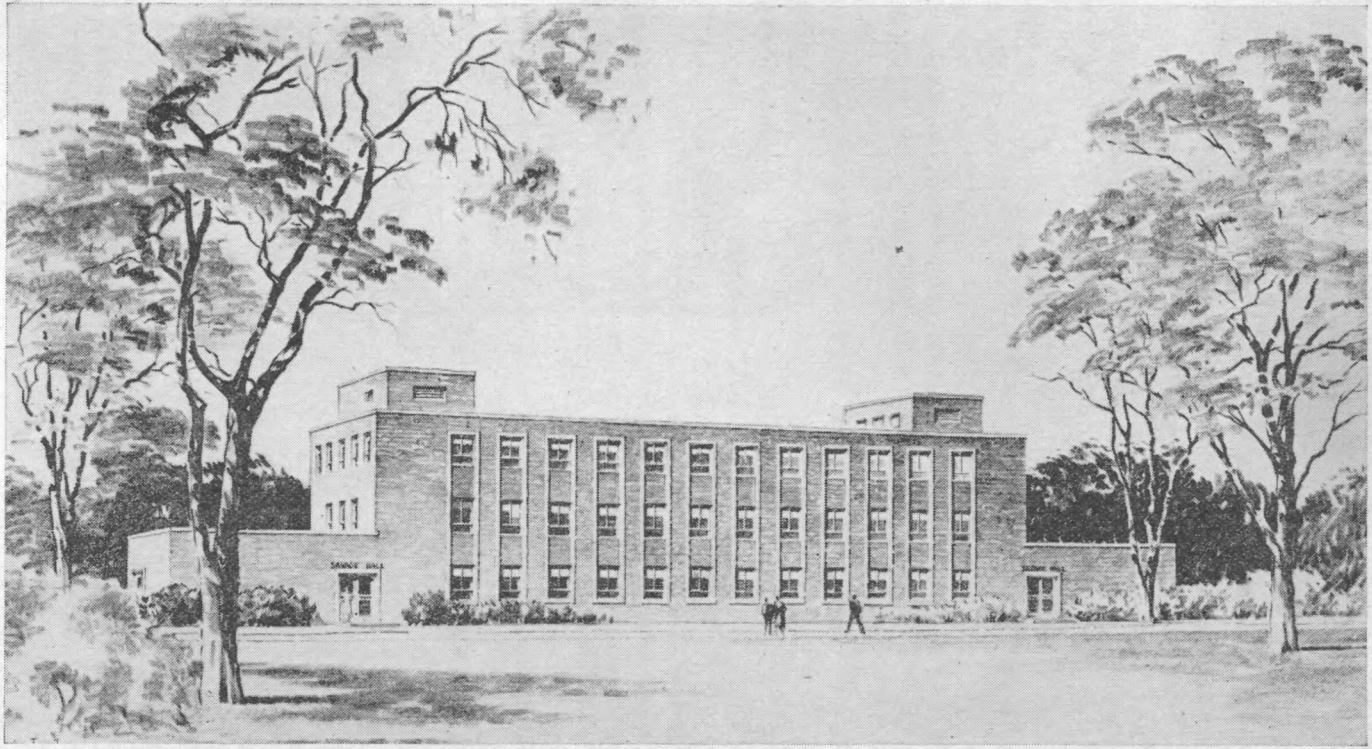
ADMINISTRATION

Cornelis Willem de Kiewiet, Ph.D., *Acting President of the University*
Edmund Ezra Day, Ph.D., LL.D., *President Emeritus*
Leonard Amby Maynard, Ph.D., D.Sc., *Director of the School*
Walter L. Nelson, Ph.D., *Secretary of the School*

INSTRUCTION AND RESEARCH

Sydney Arthur Asdell, Ph.D., *Professor (Physiology)*
LeRoy Lesher Barnes, Ph.D., *Associate Professor (Biophysics)*
Kathleen K. Berresford, M.S., *Instructor (Nutrition)*
Richard Bradfield, Ph.D., *Professor (Agronomy)*
Alice Briant, Ph.D., *Associate Professor (Food)*
Louise J. Daniel, Ph.D., *Assistant Professor (Biochemistry)*
Charles Douglas Darling, M.D., *Professor (Clinical Medicine)*
Lawrence B. Darrah, Ph.D., *Associate Professor (Economics)*
Herrel F. DeGraff, Ph.D., *Professor (Economics)*
Eugene F. DuBois, M.D., *Professor (Physiology)*
Henry Hugh Dukes, D.V.M., *Professor (Physiology)*
Vincent DuVigneaud, Ph.D., *Professor (Biochemistry)*
Joseph A. Dye, Ph.D., *Professor (Physiology)*
Gordon H. Ellis, Ph.D., *Associate Professor (Biochemistry)*
Frederick S. Erdman, Ph.D., *Associate Professor (Mechanical Engineering)*
Faith Fenton, Ph.D., *Professor (Food)*
Grace Fiala, A.B., *Research Associate (Clinical Medicine)*
Howard Merrill Gifft, C.E., *Professor (Sanitary Engineering)*
Carl Edward Frederick Guterman, Ph.D., *Professor (Pathology)*
David B. Hand, Ph.D., *Professor (Biochemistry)*
Katharine Wyckoff Harris, M.A., *Professor (Institution Management)*
Hazel Marie Hauck, Ph.D., *Professor (Nutrition)*
Barbour L. Herrington, Ph.D., *Professor (Biochemistry)*
Gustave F. Heuser, Ph.D., *Professor (Nutrition)*
Forrest Frank Hill, Ph.D., LL.D., *Professor (Economics)*
Frederic W. Hill, Ph.D., *Associate Professor (Nutrition)*
Frances Johnston, Ph.D., *Associate Professor (Food and Nutrition)*

John Kaspar Loosli, Ph.D., *Professor (Nutrition)*
Clive Maine McCay, Ph.D., *Professor (Nutrition)*
Leonard Amby Maynard, Ph.D., D.Sc., *Professor (Nutrition)*
Norman Slawson Moore, M.D., *Professor (Clinical Medicine)*
Frank Barron Morrison, B.S., D.Sc., *Professor (Nutrition)*
Yoshi Nakayama, M.A., *Research Librarian (Nutrition)*
Walter L. Nelson, Ph.D., *Associate Professor (Biochemistry and Nutrition)*
Leo Chandler Norris, Ph.D., *Professor (Nutrition)*
Catherine Personius, Ph.D., *Professor (Food)*
Marion Caroline Pfund, Ph.D., *Professor (Food Chemistry)*
Helen Pilcher, M.N.S., *Instructor (Nutrition)*
Paul Ramstad, Ph.D., *Associate Professor (Biochemistry)*
Fred Hofman Rhodes, Ph.D., *Professor (Chemical Engineering)*
Charles I. Sayles, M.M.E., *Associate Professor (Engineering)*
Milton L. Scott, Ph.D., *Associate Professor (Nutrition)*
Charles R. Shaw, M.D., *Assistant Professor (Medical Nutrition)*
James Morgan Sherman, Ph.D., *Professor (Bacteriology)*
Sedgwick E. Smith, Ph.D., *Associate Professor (Nutrition)*
G. Fred Somers, Ph.D., *Associatae Professor (Biochemistry)*
Betty Steele, Ph.D., *Assistant Professor (Food and Nutrition)*
Grace Steininger, Ph.D., *Professor (Food and Nutrition)*
James Batcheller Sumner, Ph.D., *Professor (Biochemistry)*
Kenneth L. Turk, Ph.D., *Professor (Animal Husbandry)*
Frances Elizabeth Volz, M.S., *Research Associate (Biochemistry)*
Odin Wilhelmy, Ph.D., *Assistant Professor (Biochemistry and Nutrition)*
Harold H. Williams, Ph.D., *Professor (Biochemistry)*
Charlotte Marie Young, Ph.D., *Associate Professor (Medical Nutrition)*



Savage Hall, the home of the School of Nutrition

The School of Nutrition

THE School of Nutrition was established at Cornell University in order to meet the enlarged and diversified needs of the many fields, both academic and industrial, in which a thorough knowledge of food and nutrition, and their underlying sciences, has become of importance. The program of the School offers an opportunity for the study of problems, food technology and food economics, and problems of food supply and distribution. Its curricula provide for the training of research workers and teachers in nutrition, both human and animal; nutritionists in public health and institutional work; and personnel for the food and feed industries.

ORGANIZATION AND FACILITIES

The School is an organization in which the various colleges of the University are cooperating to provide an integrated program of research and teaching in food and nutrition. It is administered by a Board consisting of the Deans of the College of Agriculture, Arts and Sciences, Engineering, Home Economics, and Medicine, the Provost, the Vice President designated by the President, the Director of the School, with the President of the University as Chairman.

The School is housed in a new building, provided by a special gift to the University for the purpose. This building contains offices, classrooms, and laboratories, and is equipped for teaching and research in the various aspects of food and nutrition. The facilities include biochemical, microbiological, and food laboratories, air-conditioned rooms for small-animal studies, and several laboratories equipped for other specific purposes. In addition, well-equipped laboratories and other facilities are available in the cooperating colleges for studies of both human and farm animal nutrition and of the food supplies concerned. The Department of Clinical and Preventative Medicine of the University offers opportunities for studying the clinical aspects of nutrition. The U. S. Plant, Soil, and Nutrition Laboratory, established at Cornell in 1939, provides unusual opportunities for studying the relation of the production and processing of food crops to their nutritive value.

CURRICULUM AND DEGREES

The School offers a two-year curriculum providing for specialization in either nutritional science or food science, and leading to the degree of Master of Nutritional Science or Master of Food Science.

ADMISSION

To be admitted to the School the applicant must hold a baccalaureate degree from a college or university of recognized standing, or have done work equivalent to that required for such a degree, except that admission is open to Cornell undergraduates who can otherwise qualify at the end of their third year and for whom a combined curriculum can be planned which will enable them to receive the bachelor's degree in their college and simultaneously complete the first year's work of the School. The applicant must have a definite professional interest in the field of nutrition. His training must have included the completion, with a superior record, of courses in the following subjects, with the approximate number of semester hours stated:

	Hours		*Hours*
Chemistry, (including Quant. & Organic)	16	Introductory course in physiology	3
Physics	6	Introductory course in human or animal nutrition	3
Biology or Zoology	6		
Bacteriology	6		
Social studies	9		

In addition, the applicant's record must show evidence that he has satisfactorily completed other courses which would be prerequisite to those he would need to take as a candidate for the degree for which he wishes to register. An applicant who cannot meet in full the specific course requirements listed above may be admitted if the Committee on Admissions and Counselling of the School so recommends after a consideration of his case, but with the understanding that the deficiencies must be made up before graduation.

An applicant who enters with the bachelor's degree and who can meet the full requirements for admission and in addition has taken certain courses considered fully equivalent to certain ones specified as required for graduation, or which his faculty adviser might consider to satisfy the requirements for approved electives, may be given advanced standing upon recommendation of the Committee on Admissions and Counselling.

Admission as special students is open to applicants who desire to register for a term or more to take specific courses but who do not wish to become candidates for a degree. Such applicants must hold a bachelor's degree, meet the other requirements specified above for admission, and show evidence that the courses desired will be of special benefit to them in their professional career.

Students not previously registered at Cornell University must meet the general requirements for admission to the University as set forth in its General Information booklet. These include the following medical requirements: (1) Every student matriculating in the University must present a certificate of vaccination against smallpox showing a successful

vaccination within five years or at least three unsuccessful attempts in that period. (2) Entering students are also required to have two injections of tetanus toxoid either by a private physician before the student enters the University or by staff doctors during the first two months of residence. If the injections are given before entrance, a physician's certificate must be presented by the student. (3) Within a month preceding or following matriculation every student must submit to the University Health Officer for permanent filing a satisfactory chest radiograph taken within this two-month period. Such radiographs are made at the Infirmary at a special rate for students.

All students admitted to the School must also register with the Registrar of the University at the beginning of each term or session. Students wishing to register for the degree of Doctor of Philosophy with a major in nutrition should apply to the Graduate School which has exclusive jurisdiction over this degree.*

Inquiries about admission should be addressed to the Office of the School of Nutrition, Cornell University, Ithaca, New York. An application for admission should be made upon the form supplied by the Office of the School. No application will be acted upon until all credentials enumerated in this form have been filed.

REQUIREMENTS FOR GRADUATION

Each student's program is carried out under the guidance of a faculty adviser. The requirements for graduation call for the completion of 60 semester hours, including the preparation of a written report on an approved problem, which may or may not require laboratory research. The two-year course differs in accordance with the field in which the student wishes to specialize, as follows:

A. *Nutritional Science.* The specialized training in this field leading to the degree of Master of Nutritional Science, emphasizes the scientific knowledge and techniques underlying nutrition. The completion of the following curriculum is required:

	Hours		*Hours*
General Biochemistry	6	History of Nutrition	1
Principles of Nutrition	3	Seminars	2
Laboratory work in nutrition	3	Advanced course in human or animal nutrition	3
Physiology	6	Report on individual problem	6–10
Food Economics	3	Approved electives	25–21
Statistics (Biometry)	2		

* Candidates for this degree who are majoring in nutrition may become informally affiliated with the School of Nutrition, if they so desire, provided they can meet its entrance requirements.

The electives will be those approved by the faculty adviser as being appropriate for rounding out the student's training in the field of nutritional science.

B. *Food Science.* The specialized training in this field, leading to the degree of Master of Food Science, emphasizes the sciences involved in food processing and utilization. The completion of the following curriculum is required:

	Hours		*Hours*
General Biochemistry	6	Advanced course in nutrition	3
Advanced Bacteriology	6	Seminars	3
Advanced course in foods	6	Report on individual problem	6–10
Food Economics	3	Approved electives	25–21
Statistics (Biometry)	2		

The electives will be those approved by the faculty adviser as being appropriate for rounding out the student's training in the field of food science.

The work involved in the report on an individual problem, required in the case of both degrees, may be carried out, with the approval of the student's faculty adviser, under the direction of any member of the faculty of the School whom the student may choose and who is willing to supervise it. The original copy of this report should be submitted to the office of the Secretary of the School of Nutrition, after approval by the Faculty Adviser, at least one week prior to the beginning of the final examination period. Directions concerning the form in which the report is to be presented may be obtained either from the student's Faculty Adviser or the Office of the Secretary of the School of Nutrition.

TRAINING FOR SPECIALIZED FIELDS

The provision for approved electives in the curricula for the two degrees enables the student, under the guidance of his faculty adviser, to prepare himself for one of several specialized fields in the general area in which the School operates. Students who wish to prepare themselves for teaching or research are given training in the principles governing the nutrition of all species, and they also have the opportunity, through an appropriate choice of electives, to learn how to apply these principles in either human or animal nutrition.

Special opportunities are provided for students of appropriate background who are interested to prepare themselves for work as nutritionists with health and welfare agencies. Here the approved electives will include certain phases of social science, the elements of public health, and appropriate informational service techniques. Opportunities for supervised experiences with health agencies are available for selected students. Suitable students are urged to spend a portion of the summer in "in-

service" training in nutrition as applied to public health. Help will be given in making the necessary contacts. These opportunities will provide assignments which can be used as a basis for meeting the requirement for a report on an individual problem.

Students who desire to prepare themselves for positions in the food industry will receive training in the sciences fundamental to work in food production and processing, quality control, and industrial research and development. The special training will emphasize biochemistry, bacteriology, and engineering, and their applications in food processing and preservation. Opportunity will be provided for studies in economics, marketing, and business administration to round out the basic needs of the student for a professional career. It is also hoped that the student will gain practical experience in a food-processing establishment prior to the completion of his studies.

Students who desire to prepare for positions in the feed industry should have completed, prior to admission, reasonably broad training in livestock production, including poultry. They will receive in the School special training in the sciences which are fundamental to the work dealing with the formulation of rations for animals, the analysis of feedstuffs, and the conduct of experimental work. The training will stress principles of animal nutrition, experimental methods in animal nutrition, animal physiology, bacteriology, and analytical procedures. In order to round out the training of the student, courses in food economics, marketing, and business administration are provided. The student will be encouraged to obtain practical experience in a feed-manufacturing plant before completing his studies for the degree.

RESIDENCE REQUIREMENTS

The normal period of residence for the completion of the requirments for a degree is four semesters or two academic years. Students holding a bachelor's degree may be considered for advanced standing, as previously mentioned. In no case may a student receive a degree from the School who has not completed two terms of residence during the regular academic year after receiving the bachelor's degree from Cornell or elsewhere. A student who holds a teaching or research assistantship involving a significant loss of time from his course work will not be given full residence credit. Assistants whose duties call for approximately 20 hours of work weekly will receive only three-fourths residence credit a term. In other cases the amount of the deduction will be determined by the Committee on Admissions and Counselling.

CREDIT FOR WORK DONE IN THE SUMMER

A student who is registered in the School may receive credit for work done in the University Summer Session if his program is approved in

advance by his faculty adviser. To receive this credit he must also be registered in the Summer Session.

A student who has been registered in the School for one term after receiving his bachelor's degree may, with the approval of his faculty adviser, register for a minimum of four and a maximum of twelve weeks for work on his individual problem under personal direction of a member of the faculty of the School and thus earn four to twelve weeks of residence credit. The student can thus make use of the summer period to meet, in whole or in part, the requirements of ten credit hours which are granted upon the completion of his report on an approved problem. A student who is registered in the School for work under personal direction must also register with the Registrar of the University.

TUITION AND FEES

A Registration Deposit of $30.00 is required of every student. A check or money order payable to Cornell should be remitted to the School of Nutrition upon notification of acceptance by the School. A Matriculation Fee of $16 and a Chest Radiograph Fee of $2 is deducted from this Registration Deposit leaving a Guaranty Fund of $12 which is refundable upon graduation or permanent withdrawal from the University.

A Tuition Fee of $225 a term is to be paid by all students registered in the School except that those students jointly registered in one of the undergraduate colleges will pay the tuition of that college.

A Graduation Fee of $10 is required of every candidate for a degree in the School at least 10 days before the degree is to be conferred.

A composite fee of $50 a term is required of each single registrant in the School. This fee covers the following services: administration, laboratory and library, health and infirmary, physical education and recreation, and student union.

Students of the School who attend classes in the Summer Session must register both in the School and in the Summer Session and pay the tuition and other fees required by the Summer Session.

A student working under personal direction in the School of Nutrition for twelve weeks (the maximum amount of residence credit which can be earned), or less, during the summer must pay a tuition fee of $14.064 a week of residence credit. He must also pay a composite fee of $45 for the twelve-week period or one-half of this fee if registered for 8 weeks or less.

Waivers of tuition may be granted, at the discretion of the President, to assistants seeking degrees in the School of Nutrition, in accordance with the following sliding scale based on the amount of their salaries as such and including bonus:

If the salary for the academic year is not greater than $1,600, the tuition fee may be waived entirely.

If the salary is greater than $1,600 but not greater than $1,700, 25 per cent of the tuition will be charged and 75 per cent may be waived.

If the salary is greater than $1,700 but not greater than $1,800, 50 per cent of the tuition will be charged and the balance may be waived.

If the salary is greater than $1,800 but not greater than $1,900, 75 per cent of the tuition will be charged and the balance may be waived.

If the salary is greater than $1,900, no waiver will be made.

FELLOWSHIPS, ASSISTANTSHIPS, AND SCHOLARSHIPS

The School of Nutrition has a limited number of fellowships, assistantships, and tuition free scholarships to which appointment is made usually during the spring term for the following year. Applications for these fellowships, assistantships, and scholarships should be made to the Office of the School of Nutrition not later than March 1.

ADVISORY SERVICE FOR STUDENTS PREPARING AT CORNELL TO ENTER THE SCHOOL

Students who prepare for admission to the School of Nutrition in the Colleges of Agriculture, Arts and Sciences, or Home Economics at Cornell University, are advised during the period of preparation by members of the faculty of the School who are also members of the faculty of the college in which the students matriculate.

Undergraduates interested in nutrition who are matriculating at Cornell University for the first time should state upon the application for admission that the business or profession (field of work) which they expect to enter upon completion of their studies is nutrition. This is necessary in order that appropriate faculty advisers may be assigned to them.

HEALTH SERVICES AND MEDICAL CARE

These services are centered in the University Clinic or out-patient department and in the Cornell Infirmary or hospital. Students are entitled to unlimited visits at the Clinic; laboratory and X-ray examinations indicated for diagnosis and treatment; hospitalization in the Infirmary with medical care for a maximum of 14 days each term and emergency surgical care. The cost for these services is included in the College and University general fee. For further details, including charges for special services, see the *General Information* booklet.

Description of Courses

THE following list of courses includes both those previously specified as required for the degrees offered and also those from which electives may be selected, with the approval of the student's faculty adviser, in accordance with his specific field of interest.

The information in parentheses following the name of the course refers to the college in which the course is given, the department, and the course number. In registering for any of these courses the information shown in the parentheses should be given rather than the name of the course. In some instances the time and place are not given in the descriptive material enclosed in the parentheses following the title of the course. In order to obtain this information the student should consult the specific departmental office or special announcements issued by the college concerned.

NUTRITION

PRINCIPLES OF ANIMAL NUTRITION. (Agriculture; Animal Husbandry 110.) Fall term. Credit three hours. For seniors and graduate students. Prerequisite, a course in human or veterinary physiology and a course in organic chemistry or biochemistry. Lectures, M W F 10. Wing B. Professor LOOSLI.

The chemistry and physiology of nutrition and the nutritive requirements for growth, reproduction, lactation, and other body functions.

LABORATORY WORK IN ANIMAL NUTRITION. (Agriculture; Animal Husbandry 111.) Fall. Credit three hours. Prerequisite, a course in quantitative analysis. Registration by permission. M W F 2–4:20. Stocking 160. Professor McCAY.

This course is designed to familiarize the student with the application of chemical methods to the solution of fundamental problems of nutrition.

NUTRITION. (Home Economics; Food and Nutrition 230.) Spring. Credit three hours. Prerequisites, elementary college courses in nutrition, biochemistry, and human physiology. Discussion, T Th 8. Van Rensselaer 339. Laboratory, F 2–4 or S 9–11. Van Rensselaer 426. Professor HAUCK and Miss NEWMAN.

Principles of nutrition as they relate to energy metabolism and weight control, hygiene of the digestive tract, proteins, minerals, and vitamins. Application of the principles of nutrition to needs of normal individuals. During and as a result of this course the student is expected to establish and maintain good nutrition practices.

FAMILY NUTRITION, WITH SPECIAL EMPHASIS ON CHILD FEEDING. (Home Economics; Food and Nutrition 340.) Fall and spring. Credit two hours. Prerequisite, Food and Nutrition 103, or 190. Lecture and discussions, W F 8. Van Rensselaer 339. Miss NEWMAN.

Family nutrition with special emphasis upon the nutritional needs of the child. Relation of nutrition to physical growth and development.

CHILD FEEDING LABORATORY. (Home Economics; Food and Nutrition 342.) Spring. Credit 1 hour. Prerequisite 340 or equivalent. Th 10–12. Van Rensselaer — Room 352. Miss NEWMAN.

Laboratory experience in planning and preparing meals for families with children. Observation of, and experience with, feeding children in nursery schools.

NUTRITION OF GROWTH AND DEVELOPMENT. (Home Economics; Food and Nutrition 440.) Spring. Credit two hours. Prerequisite 230 or equivalent. T Th 8. Van Rensselaer — Room 301. Miss STEININGER.

Relation of nutrition to growth and development from the pre-natal period to adulthood. A study of research literature.

HISTORY OF NUTRITION. (Agriculture; Animal Husbandry 215.) Fall. Credit one hour. Th 4:15. Wing E. Professor McCAY.

Lectures and conferences on the nutrition of animal species from the invertebrate to man, with special emphasis upon the fundamental discoveries in such fields as growth, comparative biochemistry, and physiology that have been synthesized into the modern science of nutrition.

SPECIAL TOPICS IN NUTRITION. (Agriculture; Biochemistry and Nutrition 220.) Spring term. Credit one hour. Primarily for graduats students. Prerequisite, a course in biochemistry and a course in nutrition. Registration by permission. T 8. Savage 145. Professor MAYNARD.

EXPERIMENTAL METHODS IN POULTRY NUTRITION. (Agriculture; Poultry Husbandry 210.) Spring. Credit two hours. For graduate students. Not given every year and not unless five or more students apply for the course. Registration by appointment. Discussion and laboratory period. Hours to be arranged. Professor NORRIS.

A critical consideration of the domestic fowl as an experimental animal and of the experimental methods used in conducting research in poultry nutrition.

ADVANCED LIVESTOCK FEEDING AND APPLIED ANIMAL NUTRITION. (Agriculture; Animal Husbandry 115.) Spring. Credit two hours. Prerequisite, a course in livestock feeding and a course in animal nutrition: Lectures and discussions, T Th 9. Wing E. Professor MORRISON. (For advanced and graduate students.)

This course includes a presentation and discussion of recent developments in the feeding and nutrition of farm animals, study of experimental methods, and critical analysis of published data.

READINGS IN NUTRITION. (Home Economics; Food and Nutrition 400.) Spring. Offered in alternate years. Credit two hours. Registration with permission of the instructor. Discussion, T Th 11. Van Rensselaer 301. Professor HAUCK.

Critical review of literature in the field of vitamin and mineral metabolism, with emphasis on the experimental data on which the principles of human nutrition are based.

[*READINGS IN NUTRITION.* (Home Economics; Food and Nutrition 401.) Spring. Offered in alternate years. Credit two hours. Registration with permission of the instructor. Professor HAUCK. T Th 11. Room 301 — Van Rensselaer.

Critical review of literature relating to energy metabolism, proteins, fats, and carbohydrates, with emphasis on the experimental data on which the principles of human nutrition are based.] Not offered in 1950–51.

SEMINAR IN ANIMAL NUTRITION. (Agriculture; Animal Husbandry 219.) Fall term. Credit one hour. Open to graduate students with major field of study in animal nutrition. Prerequisite, Course 110 or the equivalent. Registration by permission. T 4:15. Rice 201. Professor LOOSLI, leader.

A critical review of the literature and other topics of special interest to graduate students in animal nutrition.

NUTRITION SEMINAR. (Agriculture; Biochemistry and Nutrition 292.) Spring term. Credit one hour. Registration by permission. M 4:15. Savage 130. Professor MAYNARD and Staff.

Assignments and discussions of recent advances in the biochemistry and physiology of nutrition.

SEMINAR IN FOOD AND NUTRITION. (Home Economics; Food and Nutrition 360.) Fall. Credit one hour. Primarily for seniors; open to graduate students. Prerequisite, Food and Nutrition 215 or 225. Professor FENTON and Miss NEWMAN. Th 2. Van Rensselaer — Room 301.

Study of historical and current literature.

ADVANCED SEMINAR IN NUTRITION. (Home Economics; Food and Nutrition 420.) Fall. Credit one hour. T 4. Van Rensselaer 301. Professor STEININGER and department staff.

CLINICAL AND PUBLIC HEALTH NUTRITION. (Clinical and Preventive Medicine 392.) Spring. Credit two hours. Prerequisites, a course in nutrition, in physiology, and in biochemistry. Registration by permission of the instructor. For School of Nutrition and Graduate School students only. T Th 12. Savage 145. Associate Professor YOUNG and members of the medical staff.

This course is designed to familiarize the student with some of the applications of nutrition to clinical problems.

FIELD OBSERVATION AND EXPERIENCE IN COMMUNITY NUTRITION. (Clinical and Preventive Medicine 381–382.) Both terms. Credit two hours (a term). Prerequisite, consent of the instructor. For School of Nutrition and Graduate School students only. Th 9–12 and others as arranged. Room as arranged. Mrs. BERRESFORD.

Supervised observation and experiences in the community nutrition program of a county health unit. Supervision is provided by a qualified nutritionist.

PUBLIC HEALTH NUTRITION TECHNIQUES. (Clinical and Preventive Medicine 375.) Fall. Credit one hour. Registration by permission. For School of Nutrition and Graduate students only. W 9. Savage Hall. Mrs. BERRESFORD.

A discussion of the function of the public health nutritionist in official and voluntary agencies at the national, state, and local level, and a study of various techniques employed in executing a nutrition program, such as low cost budgeting, racial diet patterns, interviewing, evaluation and preparation of educational materials and visual aids, clinic procedures, consultation to institutions, and nutrition education in schools.

DIET THERAPY. (Home Economics; Food and Nutrition 330.) Fall. Credit three hours. Prerequisite, Food and Nutrition 230. Registration with permission. Lecture and discussion, M W F 8. Van Rensselaer 426. Professor HAUCK.

Diet in diseases such as fever, gastrointestinal disturbances, and diabetes.

NUTRITION AND HEALTH. (Home Economics; Food and Nutrition 190.) Fall. Credit two hours. Intended exclusively for students outside the College of Home Economics who have had no previous course in human nutrition. Acceptable for meeting entrance requirements in nutrition for School of Nutrition students. T Th 11. Room 339. Van Rensselaer. Professor HAUCK.

The relationship of food to the maintenance of health; its importance to the individual and society.

LIVESTOCK FEEDING. (Agriculture; Animal Husbandry 10.) Fall or spring term. Credit four hours. Prerequisite, Chemistry 101, 105, or Biochemistry 2. Lectures: fall term, M W F 11; spring term, M W F 9. Wing A. Laboratory: fall term, Th or F; spring term M W Th or F, 2–4:20. Wing C. Associate Professor S. E. SMITH and Assistants.

The feeding of farm animals, including the general basic principles, feeding

standards, the computation of rations, and the composition and nutritive value of livestock feeds. (Acceptable for meeting entrance requirements in Nutrition for School of Nutrition students.)

PUBLIC HEALTH

PUBLIC HEALTH AND COMMUNITY SANITATION. (Engineering 2509.) Spring. Credit three hours. Elective for advanced and graduate students. M W F 9. Room to be arranged. Associate Professor GIFFT and Assistant Professor BOND.

A general course outlining basic principles in transmission of disease and communicable disease control; organizations and functions of federal, state, and local Health Departments; standards of environmental sanitation, including water supply, waste disposal, milk, restaurant and school sanitation, insect and rodent control; industrial hygiene; vital statistics. Content of the course adjusted to the needs of the students enrolled in order to demonstrate the responsibility of individuals and their professions for maintaining the public health.

FOOD

FOOD PREPARATION: PRINCIPLES AND COMPARATIVE METHODS. (Home Economics; Food and Nutrition 225.) Spring. Credit five hours. Not to be elected by students who have had Food and Nutrition 215. Limited to sixteen students. Prerequisite, Food and Nutrition 103, and prerequisite or parallel, organic chemistry. Professor PFUND and Miss PECK.

Lecture M F 9. Amphitheatre. Discussion, W 9. Room 301. Laboratory, T Th 10:30–1. Room 358. Class will meet with Food and Nutrition 215 for lecture. Discussion period and laboratories will be independent of Food and Nutrition 215.

The application of science, particularly chemistry to the solution of problems in food preparation; experiments in comparative cookery.

PRINCIPLES OF FOOD PRESERVATION. (Agriculture; Biochemistry 130.) Spring. Credit two hours. Prerequisite, Biochemistry or Organic Chemistry. Lectures, T Th 10. Savage 145. Associate Professor RAMSTAD.

A discussion of the basic physical, chemical, and biological principles of food preservation and their application in refining, dehydration, cold storage, freezing, canning, fermentation, chemical preservation, and packaging. The effects of food processing upon the maintenance of nutritive value and on other food qualities.

FOOD SCIENCE. (Home Economics; Food and Nutrition 314.) Fall. Credit three hours. Prerequisite, Food and Nutrition 215 or 225 and 240 or 260. Registration with permission. Professor PERSONIUS. Lectures, T Th 8. 339 Van Rensselaer. Laboratory, S 8–10. Room 358.

The importance of the following in the study of food: true solutions and crystallization from solution; physical and chemical properties of fats, starches, and proteins; pigmentation of vegetables; colloidal systems, gels and sols. Laboratory work includes the effects of varying manipulation, ingredients, and cooking conditions on the preparation of products other than batters and doughs. (Note: Food and Nutrition 314 and 315 are designed as a unit to cover the material formerly covered in Food and Nutrition 310 and 320.)

FOOD SCIENCE. INTRODUCTORY EXPERIMENTAL COOKERY. (Home Economics; Food and Nutrition 315.) Spring. Credit three hours. Prerequisite, Food and Nutrition 314. Registration with permission, Professor FENTON. Lectures, T Th 8. 3M13 Van Rensselaer. Laboratory, S 8–11. Room 358.

This course is a continuation of Food and Nutrition 314. Colloidal systems such as foams and emulsions; the chemistry of carbonates and baking powder; the qualities of flours and fats of importance in baked products. Laboratory work includes the effects of varying manipulation, ingredients, and cooking conditions on

batters and doughs, foams, and emulsions. About one half of the semester will be devoted to work on individual laboratory problems.

FOOD DEMONSTRATIONS. (Home Economics; Food and Nutrition 305.) Fall and spring. Credit one hour. Limited to 10 students. Prerequisites, Food and Nutrition 215 or 225. Registration with permission. T Th 2:30–4. Fall, Room 361; Spring, Room 352. Van Rensselaer. Associate Professor FOSTER.

Emphasis on the purposes and techniques of demonstrations in relation to food preparation and nutrition, with application to teaching, extension, business, and social service.

QUANTITY FOOD PREPARATION: PRINCIPLES AND METHODS. (Home Economics; Institution Management 230.) Fall and spring. Credit five hours. Registration by permission. Prerequisites, Institution Management 100, Food and Nutrition 215 or 225. Should parallel Institution Management 220. Discussion, M 9. Van Rensselaer G62. Practice, W F 8–1:30. Van Rensselaer G62 and Cafeteria. Miss MOORE.

White uniforms, hose, and hair nets are required, beginning with the first laboratory scheduled.

A major course in institution management, with emphasis given to quantity cookery in the cafeteria kitchen; observation of management and personnel problems; use, operation, and maintenance of equipment. The student is expected to apply what has been taught in prerequisite or parallel courses, including basic principles and procedures of food preparation, food chemistry, marketing, and nutrition. Student ability for professional work in food administration is evaluated.

QUANTITY FOOD PREPARATION AND CATERING, ADVANCED COURSE. (Home Economics; Institution Management 330.) Fall and spring. Credit five hours. Registration by permission. Prerequisite, Institutional Management 200, 210 or 230. Special catering assignments require 25 to 30 hours in addition to the scheduled laboratories. Assistant Professor RIPLEY.

Laboratory, T Th 8:30–2. Discussion, S 9. Conference hours by appointment. Green Room.

White uniforms, hose, and hair nets are required for the women, chef's uniforms with caps for the men beginning with the first laboratory scheduled.

Practice in organization of work, requisition of food supplies, making menus, calculating costs, supervision of service and preparation of food for luncheons and dinners and other catering projects as assigned.

INSTITUTION ORGANIZATION AND ADMINISTRATION. (Home Economics; Institution Management 320.) Spring. Credit four hours. Prerequisites. Institution Management 230 and Hotel Accounting 240. Hotel Administration 119, Industrial and Labor Relations 50, and Textiles and Clothing 310 are suggested. Registration with permission. Lectures and discussions, M F 2–4. Van Rensselaer 124. Professor HARRIS.

Analysis and interpretation of major administrative problems such as: physical plan of a food service organization, policies underlying the plan, financial management, personnel relationships, job specifications, training employees, planning of efficient kitchens, and selection of equipment. A one or two-day trip to Syracuse or Rochester to visit various types of institutions will be included. Estimated cost of trip, $6 to $12.

SEMINAR. (Agriculture; Food Science and Technology 190.) Spring term. Credit one hour. For seniors in Food Science and students in the School of Nutrition. Th 4:30. Savage 130. Professors HERRINGTON and RAMSTAD.

ADVANCED SEMINAR IN FOOD. (Home Economics; Food and Nutrition 421.) Spring. Credit one hour. T 4. Van Rensselaer 301. Professor PERSONIUS and department staff.

CHEMISTRY OF MILK. (Agriculture; Dairy Industry 113.) Fall. Credit two hours. Prerequisite, qualitative and quantitative analysis and organic chemistry. M W 8. Stocking 120. Professor HERRINGTON.

A consideration of milk from the physico-chemical point of view.

MILK-PRODUCTS MANUFACTURING. (Agriculture; Dairy Industry 103.) Fall. Credit five hours. Prerequisite, Dairy Industry 1 and Bacteriology 1 or its equivalent. T Th 11–4:30. Stocking 120. Associate Professor KOSIKOWSKY.

The principles and practice of making butter, cheese, and casein, including a study of the physical, chemical, and biological factors involved. Consideration is given also to commercial operations and dairy-plant management.

MILK-PRODUCTS MANUFACTURING. (Agriculture; Dairy Industry 104.) Spring. Credit five hours. Prerequisite, Dairy Industry 1; should be preceded or accompanied by Dairy Industry 5. F 12–5, S 8–1. Stocking 120. Professor JORDAN.

The principles and practice of making condensed and evaporated milk, milk powders, ice-cream, and by-products, including a study of the physical, chemical, and biological factors involved.

HANDLING, STORAGE, AND UTILIZATION OF FRUIT. (Agriculture; Pomology 111.) Fall. Credit three hours. Prerequisite, Pomology 1. Lectures, T Th 8. Plant Science 143. Laboratory, Th or F 2–4:30. Plant Science 107. Professor SMOCK and Mr. .....

The important factors in harvesting and handling fruit that affect quality and marketability are studied. Emphasis is placed on the practices and problems of handling apples, but the work covers also such fruits as peaches, pears, and grapes, in so far as these are available. The effect of grades and packages on distribution and marketing is fully discussed, with some attention to the problems of market inspection. Consideration is given to the principles and practices of common, cold, and modified air storage, and to the utilization of fruits in the dried, canned, frozen, or juice forms. At least one field trip is given.

[*SPECIAL TOPICS IN VEGETABLE CROPS.* (Agriculture; Vegetable Crops 225.) Spring. Credit three hours. Primarily for graduate students. Prerequisite, Vegetable Crops 101 and Botany 31. It is recommended that Botany 231 and 232 precede or accompany this course. Room and time to be arranged. Professors THOMPSON, RALEIGH, ORA SMITH, and HARTMAN, and Associate Professor JACOB.] Not given in 1950–51.

In this course the students are expected to review critically and to evaluate the more important research publications that deal with vegetable production, handling, and storage problems. In the discussions attention is given to research methods and techniques.

HANDLING VEGETABLE CROPS, ADVANCED COURSE. (Agriculture; Vegetable Crops 112.) Fall term. Credit four hours. Lectures, T Th 11. East Roberts 222. Laboratory, T or W 2–4:30. East Roberts 223. One-hour conference period, to be arranged. Professor HARTMAN.

This course has the same lectures and laboratories as Course 12. Much more outside reading of research publications in the field is required in Course 112 than in Course 12, and different examinations are given for the two courses. One two-day and three afternoon trips are required. Estimated partial cost of transportation to be collected from the student, $2.

VEGETABLE CROPS, ADVANCED COURSE. (Agriculture; Vegetable Crops 101.) Fall. Credit three hours. Prerequisite, Vegetable Crops 1 and Botany 31. Lectures, M W F 9. One conference period to be arranged. East Roberts 223. Professor THOMPSON.

A course devoted to a systematic study of the sources of knowledge and opinions

as to practices in vegetable production and handling. Results of experiments that have been concluded or are being conducted are studied, and their application to the solution of practical problems is discussed.

ELEMENTARY CHEMICAL ENGINEERING. (Engineering 5110.) Spring. Credit three hours. Prerequisite, Chemistry 102 or 106. Primarily for students in Agriculture or Nutrition. Not open to students in Chemical Engineering. Lectures, M W F 11. Olin 158. Professor RHODES.

A general discussion of the fundamental operations and processes of chemical engineering, with particular emphasis on their applications in the food-processing industries. Among the topics discussed are the unit operations of evaporation, filtration, agitation, distillation, and drying, and the general design of food-processing plants.

ELEMENTARY FOOD ENGINEERING. (Engineering 3510.) Fall. Credit three hours. Prerequisite, Elementary physics and chemistry. Primarily for students of Agriculture or Nutrition. Not open to Engineering students. Lectures, T Th S 9. Caldwell 143. Mr. SILVER.

An elementary course to acquaint non-engineering students with some of the basic principles and knowledge of electric motors, engines, and refrigerating equipment used in the preservation and storage of foods.

BACTERIOLOGY

ADVANCED BACTERIOLOGY. (Agriculture; Bacteriology 103.) Spring term. Credit six hours. Prerequisite, Course 1, quantitative analysis, and organic chemistry. Lectures and laboratory practice, M W F 1:40–5. Professor SHERMAN, Assistant Professor SEELEY, and assistants.

A systematic study of the important groups of bacteria that are of significance in water, milk, foods, and industry, together with the methods used in these fields of bacteriology.

HIGHER BACTERIA AND RELATED MICROOGANISMS. (Agriculture; Bacteriology 105.) Fall. Credit four hours. Prerequisite, Bacteriology 1. Lectures, recitations, and laboratory practice, T Th 1:40–5. Stocking 119 and 323. Professor KNAYSI and assistant.

A study of the higher bacteria, together with the yeasts and molds that are of special importance to the bacteriologist.

PHYSIOLOGY OF BACTERIA. (Agriculture; Bacteriology 210.) Fall term. Credit two hours. Prerequisite, Bacteriology 1, at least one additional course in bacteriology, and one in organic chemistry. Lectures, T Th 8. Stocking 120. Assistant Professor DELWICHE.

The physiology of bacteria and the biochemistry of microbic processes.

MORPHOLOGY AND CYTOLOGY OF BACTERIOLOGY. (Agriculture; Bacteriology 213.) Fall term. Credit three hours. For seniors and graduate students. Lectures, T Th S 9. Stocking 119. Professor KNAYSI.

The morphology, cytology, and microchemistry of microorganisms.

CHEMISTRY OF BACTERIAL PROCESSES. (Agriculture; Bacteriology 215.) Spring. Credit two hours. For seniors and graduate students. Lectures, T Th 8. Stocking 119. Assistant Professor DELWICHE.

The chemistry of metabolism, fermentation, and nutrition of microorganisms.

BIOCHEMISTRY

GENERAL BIOCHEMISTRY, LECTURE. (Agriculture; Biochemistry 101.) Fall. Credit four hours. Prerequisites, Chemistry 215, or the equivalent; and 303 and 305 or the equivalent. Lectures, M W F S 11. Savage 100. Professor WILLIAMS.

For graduate and advanced undergraduate students, dealing with the chemistry of plant and animal substances and the reactions occurring in biological systems.

GENERAL BIOCHEMISTRY, LABORATORY. (Agriculture; Biochemistry 102.) Fall. Credit two hours. Prerequisite or parallel, Biochemistry 101. Laboratory, M W or T Th 2–4:20. Savage 230. Professor WILLIAMS and assistants.

Laboratory practice with plant and animal materials, and the experimental study of their chemical properties.

BIOCHEMISTRY OF LIPIDS AND CARBOHYDRATES. (Agriculture; Biochemistry 201.) Spring. Credit two hours. Prerequisite, Biochemistry 101 and 102, and Physical Chemistry 405 and 406, or the equivalent. Lectures, M W 9. Savage 100. Professor SUMNER and Associate Professor NELSON.

Discussion of the properties and biological role of the lipids and carbohydrates.

BIOCHEMISTRY OF PROTEINS AND ENZYMES. (Agriculture; Biochemistry 202.) Spring. Credit two hours. Prerequisite, Biochemistry 101 and 102, and Physical Chemistry 405 and 406, or the equivalent. Lectures, T Th 9. Savage 100. Professor SUMNER.

Discussion of the properties and biological role of proteins and enzymes.

ADVANCED BIOCHEMISTRY, LABORATORY. (Agriculture; Biochemistry 203.) Spring term. Credit three hours. Prerequisite, to accompany or follow courses Biochemistry 201 and 202. Registration by permission only. M W 2–5. Savage 230. Professor SUMNER and Associate Professor W. L. NELSON.

Practice in the use of special techniques and instruments employed in biochemical research and in the isolation of biochemical compounds.

SELECTED TOPICS IN FOOD BIOCHEMISTRY. (Agriculture; Biochemistry 140.) Spring. Credit two hours. Prerequisite. Biochemistry. Biochemistry 101. Lectures, M W 10. Savage 145. Associate Professor RAMSTAD.

A discussion of some of the important non-microbial changes in foods, such as denaturation and the Maillard browning reaction. Emphasis is placed on the occurrence, significance, and prevention or control of the changes as they affect the color, odor, flavor, texture, or nutritive value of foods.

[*PLANT BIOCHEMISTRY.* (Agriculture; Biochemistry 210.) Spring. Credit two hours. Prerequisite, Biochemistry 101 and 102 or the equivalent. Given in alternate years. Associate Professor NEAL.] Not given in 1950–51.

Lectures and discussion of biochemical topics of particular interest to students in plant sciences.

BIOCHEMISTRY SEMINAR. (Agriculture; Biochemistry 290.) Fall term. Credit one hour. Registration by permission. M. 4:15. Savage 130. Professor SUMNER and Staff.

Assignments and discussions of recent advances in biochemistry.

FOOD BIOCHEMISTRY SEMINAR. (Agriculture; Biochemistry 294.) Fall term. Credit one hour. Registration by permission. T 4:30. Savage 145. Associate Professor RAMSTAD.

Assignments and discussions of literature pertaining to the biochemical aspects of food processing.

CHEMISTRY AND PHYSICS

CHEMISTRY OF NATURAL PRODUCTS. (Arts and Sciences; Chemistry 395–396.) Throughout the year. Two hours a term. Prerequisite, Chemistry 320 or 365–366. Primarily for graduate students. Students may register for either term separately. Lectures, T Th 9. Assistant Professor CAIN.

A discussion of the organic chemistry of natural products. Fall term: terpenes, vitamins A, quinones, plant pigments, antibiotics, and alkaloids. Spring term:

amino acids, proteins, carbohydrates, vitamin C, the vitamin B group, and steroids. Given in alternate years.

ANALYTICAL METHODS. (Agriculture; Dairy Industry 111.) Spring. Credit four hours. Prerequisite, quantitative analysis. Lectures, T Th 10. Laboratory practice, T 1–5. Stocking 120. Professor HERRINGTON and assistant.

A study of the more important operations and apparatus used in quantitative analysis and their practical application.

[*ELEMENTARY PHYSICAL CHEMISTRY.* (Arts and Sciences; Chemistry 405, 406.) Throughout the year. Credit: Chemistry 405, three hours; Chemistry 406, two hours. Prerequisite, Chemistry 303 and 305 and Mathematics 153–154. Chemistry 405 is prerequisite to Chemistry 406. Open only to students in the biological sciences. Lectures, fall term, T Th S 12; spring term, T Th 12. Professor HOARD.

A survey of the principles of elementary physical chemistry, including an introduction to colloid chemistry and electrochemistry.] Not offered in 1950–51.

INTRODUCTORY PHYSICAL CHEMISTRY. (Arts and Sciences; Chemistry 403–404.) Throughout the year. Credit three hours a term: Prerequisite, Chemistry 215 or 220 and 222, 307–308, Mathematics 161–162–163, and Physics 107 and 108 (or their substantial equivalent). Chemistry 403 is prerequisite to 404. Lectures, M W F 9. Professor BRIGGS.

A systematic presentation of the principles of physical chemistry. The topics include: the properties of gases, liquids, and solids; physical and chemical equilibrium in homogeneous and heterogeneous systems; the mass law, theorem of Le Chatelier, and the phase rule; thermochemistry and elementary thermodynamics; the theory of solutions; ionic equilibria; chemical kinetics; problems in physical chemistry.

INTRODUCTORY PHYSICAL LABORATORY. (Arts and Sciences; Chemistry 411–412.) Throughout the year. Credit three hours a term. Prerequisite or parallel course, Chemistry 403–404, or 407–408. Students may register for either term separately. Enrollment may be limited. Laboratory, M T or Th F 2–4:30, or S 8–1. Professors BRIGGS, HOARD, MUSCHLITZ, and assistants.

Qualitative and quantitative experiments illustrating the principles of physical chemistry, and practice in performing typical physico-chemical measurements.

[*COLLOID CHEMISTRY.* (Arts and Sciences; Chemistry 440.) Spring. Credit three hours. Prerequisite, Chemistry 403–404, or 407–408. Lectures, M W F. Professor BRIGGS.

The general theory of colloid chemistry and adsorption, with emphasis on the preparation and properties of inorganic colloids.] Given in alternate years. Not offered in 1950–51.

PHYSICS FOR STUDENTS OF BIOLOGY AND MEDICINE. (Arts and Sciences; Physics 200.) Either term. Credit three hours. Prerequisites, six semester hours of college work in each of the following: physics, chemistry, and a biological science. Lectures, T Th 12. Laboratory, T or Th 2–4. Associate Professor BARNES.

Lectures, demonstrations, and laboratory experiments dealing with such topics in molecular physics, electricity and magnetism, electromagnetic radiation and nuclear physics as are related to the study of biology and medicine.

ECONOMICS

FOOD ECONOMICS. (Agriculture; Agricultural Economics 160.) Spring. Credit three hours. Designed especially for students in the School of Nutrition and in the College of Home Economics. Not open to students in the College of Agriculture except by permission of the instructor. Lectures and discussion, M W F 8. Warren 325. Professor DeGRAFF.

Economic aspects of food, including production, distribution, and consumption, with special emphasis on the economics of diet.

MARKETING. (Agriculture; Agricultural Economics 141.) Spring term. Credit three hours. Lectures, M F 11. Warren 25. Discussion, M or T 2–4. Warren 225. Associate Professor BRUNK.

Development of agricultural marketing; characteristics of consumer demand; peculiarities of agricultural supply; and the costs, functions, and services involved in the marketing of farm products.

SURVEY OF INDUSTRIAL AND LABOR RELATIONS. (Ind. Labor Relations 293.) Fall and spring. Credit three hours. Open to students not in ILR School. Fall, M W F 1. Mr. .....

A survey for students in other divisions of the University. The course will include an analysis of the major problems in industrial and labor relations: labor union history, organization, and operation; labor market analysis and employment practices; industrial and labor legislation and social security; personnel management and human relations in industry; collective bargaining, mediation, and arbitration; the rights and responsibilities of employers and employees; the major governmental agencies concerned with industrial and labor relations.

MATHEMATICS

ANALYTIC GEOMETRY AND CALCULUS. (Arts and Sciences; Mathematics 161–162–163.) Three terms; each course is offered each term. Credit three hours a term. Prerequisites, Trigonometry, and Intermediate Algebra. Course 161 is prerequisite to 162. Course 162 is prerequisite to 163. Lectures; Fall term: 161, T Th 8, 10 or 12; 162, M W 8; 163, M W 8, 10 or 12. Spring term: 161, M W 8; 162, T Th 8, 10 or 12; 163, M W 8. One recitation a week to be arranged.

Primarily for students in the College of Engineering. Students taking Physics 107 who have not had analytic geometry or calculus should take Mathematics 161 concurrently with Physics 107.

MATHEMATICS FOR SOCIAL AND BIOLOGICAL SCIENCES. (Arts and Sciences; Mathematics 153–154.) Throughout the year. Credit three hours a term. Prerequisites, Plane Geometry and Intermediate Algebra. First term prerequisite to second. T Th S 10.

Covers those parts of analytic geometry and calculus which are of greatest importance in statistics and various applications in economics, sociology, psychology, biology, etc. Emphasis is on conceptual understanding. This course is not intended to satisfy prerequisites for courses in Mathematics, Physics, Chemistry, Architecture, or Engineering. Mathematics 154 will serve as prerequisite for Mathematics 711.

STATISTICAL METHODS OF ANALYSIS. (Agriculture; Plant Breeding 211.) Fall. Credit three hours. For graduate students. Seniors admitted by special permission. T 11. Warren 125. Th 2–4. Plant Science 233. Associate Professor LIVERMORE.

A discussion of statistical methods for the study of variation, correlation, curve fitting, experimental error, the analysis of variance and of covariance; and the application of these methods to problems in biology and related fields.

EXPERIMENTAL METHODS. (Agricultural; Plant Breeding 212.) Spring term. Credit two hours. Prerequisite, Course 211 or the equivalent. F 2–4. Plant Science 141. Professor ATWOOD.

The use of statistical methods and experimental design in problems of plot technique and related agricultural research.

ADVANCED STATISTICAL METHODS. (Agriculture; Plant Breeding 213.) Fall term. Credit four hours. Prerequisite, Course 211, Industrial and Labor Relations 103, or the equivalent. M W F 8. Plant Science 141. Laboratory to be arranged. Professor FEDERER.

Principles and interpretation of statistical methods in connection with small sample theory as applied to experimental results. Topics covered are the study of variation, analysis of variance and covariance, multiple and curvilinear regression, individual degrees of freedom, and tests of significance.

ADVANCED STATISTICAL METHODS. (Agriculture; Plant Breeding 214.) Spring term. Credit four hours. Prerequisite, Course 213 or the equivalent. T Th S 8. Laboratory to be arranged. Plant Science 141. Professor FEDERER.

Application of the material presented in Course 213 on experimental and sampling design. Factorial experiments, randomized block design, Latin square design, and some of the incomplete block designs are discussed.

STATISTICS. (Ind. Labor Relations 210.) Credit three hours. Either term. T Th 11. Laboratory to be arranged.

An introduction to basic concepts and applications of Statistics: description of frequency distributions (averages, dispersion and simple correlation) and introduction to statistical inference. This course may be taken as a prerequisite to certain of the specialized courses on applications of statistics offered in various departments.

ECONOMIC AND SOCIAL STATISTICS. (Industrial and Labor Relations 510.) Credit three hours. Fall term. T Th 9. Laboratory, T 3–5.

For graduate students who have not taken a course in Statistics or who wish to take a refresher course. Emphasis will be placed on discussion of technical aspects of statistical analysis, and on initiative in selecting and applying statistical methods to research problems. The subjects ordinarily covered will include analysis of frequency distribution, time series (including index numbers), regression and correlation analysis, and selected topics from the area of statistical inference.

PRINCIPLES OF INDUSTRIAL ACCOUNTING AND COST FINDING. (Engineering 3231.) Fall. Credit three hours. Two recitations and one computing period a week.

A basic course in the principles of industrial accounting including controlling accounts, special journals and ledgers, voucher system, and elements of manufacturing cost collection.

PHYSIOLOGY AND HISTOLOGY

PHYSIOLOGY. (Veterinary; Physiology 12.) Spring. Credit three hours. M W F 8. James Law Hall. Professor DUKES.

Lectures, demonstrations, and recitations on blood and lymph, circulation, respiration, digestion, and absorption. The action of drugs (pharmacodynamics) will be considered where possible.

PHYSIOLOGY. (Veterinary; Physiology 13.) Fall. Credit three hours. M T W 9. James Law Hall. Professors DUKES and DOUGHERTY.

Lectures, demonstrations, and recitations on the muscular and nervous systems, senses, excretion, metabolism, heat regulation, endocrine organs, and reproduction. The action of drugs will receive attention where possible.

EXPERIMENTAL PHYSIOLOGY. (Veterinary; Physiology 14.) Fall. Credit three hours. Laboratory, M 10–12:30, F 8–1; or W 10–12:30, S 8–1. Laboratory fee, $18. For non-veterinary students registration is by permission. Professors DUKES and DOUGHERTY and assistants.

Special emphasis is placed on mammalian physiology. A part of the course is devoted to pharmacodynamics.

ADVANCED EXPERIMENTAL PHYSIOLOGY. (Veterinary; Physiology 16.) Spring. Credit three hours. Prerequisites, Physiology 12 or 13, or its equivalent, and Physiology 14, or its equivalent. Registration by permission. Laboratory, F 9–1. A conference hour to be arranged. Laboratory fee, $10. Professors DUKES and DOUGHERTY.

ELEMENTARY ENDOCRINOLOGY. (Agriculture; Animal Husbandry 127.) Fall. Credit two hours. T Th 10. Wing C. Assistant Professor HANSEL.

A general course in the physiology of the endocrine system.

PHYSIOLOGY OF REPRODUCTION. (Agriculture; Animal Husbandry 125.) Spring. Credit two hours. Prerequisite, a course in human or veterinary physiology. Lectures, M W 10. Wing C. Professor ASDELL.

An advanced course in reproduction, principally in mammals.

ENDOCRINOLOGY AND METABOLISM. (Veterinary; Physiology 305.) Fall. Credit three hours. Prerequisites, six or more hours of Biology, and a previous or parallel course in Organic Chemistry. M W F 8. Professor DYE.

A study of digestion, excretion, metabolism, endocrinology, and reproduction. Illustrated lectures.

HISTOLOGY: THE BIOLOGY AND DEVELOPMENT OF THE TISSUES. (Arts and Sciences; Zoology 301.) Fall. Credit four hours. Prerequisites, Zoology 101–102, or 103–104, and 211–212. Lectures, T Th 11. Laboratory, T Th 8–10:30 or 2–4:30. Associate Professor WIMSATT and assistants.

A general survey of the structure and development of the tissues. The treatment is general, designed to provide students of biology with a basis for the understanding of normal and abnormal structure of the vertebrates. Each student will make for his own use a series of typical microscopic preparations.

SPECIAL HISTOLOGY: THE BIOLOGY OF THE ORGANS. (Arts and Sciences; Zoology 302.) Spring. Credit four hours. Prerequisite, Zoology 301. Lectures, W F 9. Laboratory, W F 2–4:30. Associate Professor WIMSATT and assistants.

A continuation of Zoology 301. Zoology 301 and 302 together give the fundamental facts of the microscopic structure and development of the body. There is also offered opportunity to gain knowledge of technique in the fixing, embedding, and sectioning of selected organs.

SOCIAL STUDIES

THE FIELD OF SOCIAL WORK. (Agriculture; Rural Sociology 124.) Fall term. Credit three hours. Not open to freshmen or sophomores. Prerequisite, one course in sociology and one course in psychology. Lectures and discussions, M W F 9. Warren 340. Acting Assistant Professor HALL.

This course considers the field of social work and its services designed to meet a wide range of human needs growing out of social, economic, and emotional maladjustments. An understanding of social work is developed through a study of the processes of social case work, social group work, and community organization. Consideration is given to social work as a career, the professional knowledge and skill necessary for the practice of social work, and how these can be acquired through training.

SOCIAL SERVICES TO INDIVIDUALS. (Agriculture; Rural Sociology 126.) Spring. Credit three hours. Prerequisite, Rural Sociology 124. Lectures and discussions, M W F 11. Warren 302. Acting Assistant Professor HALL.

An analytical study of attiudes and behavior commonly encountered in helping people who have personal and social problems. A survey of social case-work methods, with particular emphasis on the technique of interviewing. Discussion of case material provided by the instructor and from student's own experience.

[*AN INTRODUCTION TO THE PUBLIC SOCIAL SERVICES.* (Agriculture; Rural Sociology 128.) Fall. Credit three hours. Prerequisite, Rural Sociology 124. Lectures and discussion, M W F 10. Warren 302. Assistant Professor .....

The development of governmental responsibility for meeting economic need and social problems related thereto. An analysis of the basic concepts underlying the organization and administration of public social services.] Not given in 1950–51.

[*FAMILY RELATIONSHIPS AND FAMILY DEVELOPMENT.* (Home Economics; Child Development and Family Relationships 460.) Fall. Credit three or four hours.]. Not offered in 1950–51.

[*PSYCHODYNAMICS OF HUMAN BEHAVIOR.* (Home Economics; Child Development and Family Relationships 360.)] Not offered in 1950–51.

RURAL COMMUNITY ORGANIZATION. (Agriculture; Rural Sociology 111.) Spring term. Credit three hours. Prerequisite, Course 1 or 12 or permission of the instructor. T Th S 11–12:20. Warren 340. Assistant Professor REEDER.

A consideration of the problems involved in helping people and organizations in a community work together to meet their common needs.

Problems which arise in helping schools, churches, farm organizations, and civic groups in integrating themselves into the life of the community is one part of this consideration. Students are given the opportunity to practice some organization techniques which have been found successful in community organization work.

RESEARCH

SPECIAL PROBLEM. (School of Nutrition 199.) Credit variable. Report on individual problem under direction of any member of the faculty of the School of Nutrition. See page 7 of this announcement for details.